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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/748,473	12/30/2003	Richard D. Breault	C-3020	7083

7590 01/25/2006

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EXAMINER

YUAN, DAH WEI D

ART UNIT	PAPER NUMBER
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1745

DATE MAILED: 01/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/748,473	BREAULT, RICHARD D.	
	Examiner	Art Unit	
	Dah-Wei D. Yuan	1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>12302003</u> . | 6) <input type="checkbox"/> Other: ____. |

DIRECT ANTIFREEZE COOLED FUEL CELL POWER PLANT
WITH PASSIVE WATER MANAGEMENT

Examiner: Yuan

S.N. 10/748,473

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January 23, 2006

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-4,6,7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Condit et al. (US 6,419,891 B1) in view of Breault et al. (US 6,461,753 B1).

With respect to claim 1, Condit et al. teach a fuel cell power plant for generating power comprising at least one fuel cell having an electrolyte (62), an anode catalyst (64), a cathode catalyst (66), an anode support means, a cathode support means, a porous anode water transport plate (68) (anode cooler plate), an antifreeze solution, a porous cathode water transport plate (74) (cathode water management plate), and water support plates (separator plate) that are adjacent to the porous anode and cathode water transport plates and from a network of coolant channels for delivering the coolant to the water transport plates. See Column 9, Line 10 to Column 10, Line 18. However, Condit et al. do not teach or suggest the addition of a pressure control means for maintaining a positive pressure differential between the fuel stream and the antifreeze stream. Breault et al. teach a fuel cell that uses an antifreeze solution to remove heat from the fuel cell. The fuel cell further include a pressure control means in fluid communication with cooler plate for maintaining a positive pressure differential between the process oxidant and reducing fluid

reactant streams passing through the fuel cell within the anode and cathode flow fields. See Column 5, Lines 13-65. Therefore, it would have been obvious to one of ordinary skill in the art to include a pressure control means onto the fuel cell power plant of Condit, because Breault et al. teach the use of such pressure control means to maintain a positive pressure differential between the process oxidant and reduce the fluid reactant streams passing through the fuel cell.

With respect to claim 2, Condit et al. teach the fuel cell power plant further comprising a coolant feed line (38) and a coolant discharge line (40), a coolant pump (42), a coolant heat exchanger (44) (radiator), an oxidant saturator (172) (coolant evaporator). See Figures 1 and 3, Column 8, Lines 1-26; Column 15, Line 52 to Column 16, Line 31.

With respect to claim 3, Condit et al. teach the fuel cell power plant further comprising an oxidant discharge line (40), an oxidant recycle line (48) and an oxidant saturator (172) (coolant evaporator). See Column 8, Lines 1-26.

With respect to claim 4, Condit et al. teach the fuel cell power plant further comprising a coolant channels (90) (water management channel) defined within the cathode water transport plate (74) (cathode water management plate) to extend between the coolant heat exchanger (a condensation zone) to the oxidant saturator (an evaporation zone). See Column 9, Line 61 to Column 10, Line 18.

With respect to claim 6, Condit et al. teach the fuel cell power plant further comprising a plurality of fuel cells to form a cell stack assembly enclosed within a frame structure. See Column 8, Line 62 to Column 9, Line 8. The fuel cell power plant further comprises water support plates (separator plate) that are adjacent to the porous anode and cathode water transport

plates and from a network of coolant channels for delivering the coolant to the water transport plates as shown in Figure 2 of Breault et al.

With respect to claim 7, Condit et al. teach the cathode support means may be wetproofed depending on performance requirements of the cell. See Column 9, Lines 30-45.

3. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Condit et al. (US 6,419,891 B1) in view of Breault et al. (US 6,461,753 B1) as applied to claims 1-4,6,7 above, and further in view of Breault et al. (US 6,416,892 B1).

Condit et al. and Breault et al. disclose a fuel cell power plant as described above in Paragraph 2. However, Condit et al. and Breault et al. do not disclose the use of a cooler plate peripheral edge seal. Breault ('892) teach the use of edge seals (106,108) to restrict the movement of the process oxidant or exhaust stream through the perimeter of the porous body. See Column 10, Lines 10, Lines 1-62. Therefore, it would have been obvious to one of ordinary skill in the art to add a cooler plate peripheral edge seal between the anode cooler plate and the separator plate, an edge seal between the separator plate and the anode support means and an edge seal disclosed by Breault ('892), because Breault teach the use of edge seal to restrict the movement of the fluid through the perimeter of the porous body in the fuel cell system.

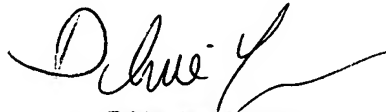
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dah-Wei D. Yuan whose telephone number is (571) 272-1295. The examiner can normally be reached on Monday-Friday (8:00-5:00).

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan, can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Dah-Wei D. Yuan
January 23, 2006



DAH-WEI YUAN
PRIMARY EXAMINER